ABSTRACT OF THE DISCLOSURE

A system and method maps Virtual Local Area Network (VLAN) designations to Internet Protocol version 6 (IPv6) site identifiers (IDs), and embeds site IDs into scoped internet addresses in such a way as to facilitate processing by primarily hardware-

5 oriented forwarding tables. A router has a plurality of interfaces for receiving and forwarding packets, and a route processor for making forwarding decisions for received packets. The route processor includes a routing engine, a routing table, a forwarding information base (FIB), a VLAN store and a site ID store. At least some of the router's interfaces are associated with corresponding VLAN IDs, and the site ID store is preconfig-

10 ured with a mapping of VLAN IDs to site IDs. For IPv6 packets with link-local unicast destination addresses, embedding the VLAN ID associated with the inbound interface into the address, while for packets with site-local unicast destination addresses, using the retrieved VLAN ID as an index to obtain the corresponding site ID, which is then embedded into the address. The modified destination address is then applied to the FIB,

15 which is a forwarding table optimized to permit fast lookups, to derive the outbound interface from which the packet is to be forwarded to reach the destination entity.